

# ABSTRACT

A probe card assembly includes a probe card, a space transformer having resilient contact structures (probe elements) mounted directly to (i.e., without the need for additional connecting wires or the like) and extending from terminals on a surface thereof, and an interposer disposed between the space transformer and the probe card. The space transformer and interposer are "stacked up" so that the orientation of the space transformer, hence the orientation of the tips of the probe elements, can be adjusted without changing the orientation of the probe card. Suitable mechanisms for adjusting the orientation of the space transformer, and for determining what adjustments to make, are disclosed. The interposer has resilient contact structures extending from both the top and bottom surfaces thereof, and ensures that electrical connections are maintained between the space transformer and the probe card throughout the space transformer's range of adjustment, by virtue of the interposer's inherent compliance. Multiple die sites on a semiconductor wafer are readily probed using the disclosed techniques, and the probe elements can be arranged to optimize probing of an entire wafer. Composite interconnection elements having a relatively soft core overcoated by a relatively hard shell, as the resilient contact structures are described.